

Copper Nanoclusters, Methods for Obtaining Same and Application Thereof in the Treatment of Menkes Syndrome

ABSTRACT

The subject of the present invention is copper nanoclusters characterized in that they:

- are covered on the surface thereof by a mixed layer comprising histidine (His), acetate ions (Ac) and possibly ascorbate ions (Asc);
- have a spherical shape;
- have a hydrodynamical diameter ranging from 0.6 to 2.0 nm, preferably 1.3 nm;
- have a metallic core with a diameter ranging from 0.5 to 1.5 nm, preferably 1.0 nm;
- have a temporal stability ranging from 5 to 12 weeks, when the nanoclusters are in solution;
- have a temporal stability of at least 12 months, and preferably of 12 to 18 months, when the nanoclusters are in dried form;
- have spectrophotometric properties, with a shoulder in the UV-Visible spectrum at 325 ± 10 nm and a fluorescence spectrum with excitation wavelengths ranging from 365 to 395 nm and emission wavelengths ranging from 445 to 475 nm;

said copper nanoclusters are designated by the formula "CuNC@HisAc" or "CuNC@HisAcAsc."

The invention also relates to a method for preparation of copper nanoclusters.

The subject of the invention is also copper nanoclusters for use in the treatment of pathologies related to a copper deficit, and in particular Menkes syndrome.

[No Suitable Figure]